

IPEA/US

Claims:

1. A drill sharpener comprising a housing which encloses a rotatable grinding wheel assembly, the housing having a point-splitting port to facilitate a point-splitting operation upon a multi-flute drill bit to remove material between said flutes, the port comprising a guide feature that maintains a longitudinal length of the bit along a predetermined axial line and at a predetermined angular orientation with respect to said line as said material is removed by the grinding wheel assembly.
2. A drill sharpener as recited in claim 1, wherein said point-splitting port has an opening slightly larger than a barrel of a chuck to be inserted therein, the chuck adapted to hold said bit during said point-splitting operation, and wherein the guide feature cooperates with a surface of the chuck to maintain the bit along said predetermined axial line and at said predetermined angular orientation.
3. A drill sharpener as recited in claim 2, wherein the port further comprises a generally cylindrical wall of the housing and wherein the guide feature comprises a resilient portion of said generally cylindrical wall and a flange protruding radially inwardly from said resilient portion of said wall.
4. A drill sharpener as recited in claim 3, wherein said resilient portion of said wall comprises a tongue element formed in said wall and attached to said wall at one end thereof.
5. A drill sharpener as recited in claim 1, wherein the port further comprises a stop feature that limits further advancement of the bit along the predetermined axial line to limit the amount of said material removed from said bit.
6. A drill sharpener as recited in claim 1, wherein the point-splitting operation is carried out by inserting the bit into the port using the guide feature to maintain the bit in a first orientation while removing a first portion of said material from the bit, removing the bit from the port, and reinserting the bit into the port using the guide feature to maintain the bit in a second orientation that is 180 degrees

opposite the first orientation with respect to the axial line while removing a second portion of said material from the bit.

7. A drill sharpener comprising a housing which encloses a grinding wheel assembly and a chuck adapted to securely retain a multi-flute drill bit, the housing comprising a sharpening port adapted to receive the chuck to present said drill bit to the grinding wheel assembly to sharpen said flutes, the housing further comprising a point-splitting port adapted to receive the chuck to present said drill bit to the grinding wheel assembly to remove material between said flutes, wherein the point-splitting port comprises a guide feature that maintains a longitudinal length of the bit along a predetermined axial line and at a predetermined angular orientation with respect to said line as said material is removed by the grinding wheel assembly during the point-splitting operation.

8. A drill sharpener as recited in claim 7, wherein the point-splitting port has an opening slightly larger than a barrel of the chuck, and wherein the guide feature cooperates with a surface of the chuck to maintain the bit along said predetermined axial line and at said predetermined angular orientation during the point-splitting operation.

9. A drill sharpener as recited in claim 7, wherein the point-splitting port further comprises a generally cylindrical wall of the housing and wherein the guide feature comprises a resilient portion of said generally cylindrical wall and a flange protruding radially inwardly from said resilient portion of said wall.

10. A drill sharpener as recited in claim 9, wherein said resilient portion comprises a tongue element formed in said wall and attached to said wall at one end thereof.

11. A drill sharpener as recited in claim 7, wherein the point-splitting port further comprises a stop feature that limits further advancement of the bit along the predetermined axial line to limit the amount of said material removed from said bit.

10EA/16

12. A drill sharpener as recited in claim 7, wherein the point-splitting operation is carried out by inserting the bit into the point-splitting port using the guide feature to maintain the bit in a first orientation while removing a first portion of material from between said flutes, removing the bit from the port, and reinserting the bit into the port using the guide feature to maintain the bit in a second orientation that is 180 degrees opposite the first orientation with respect to the axial line while removing a second portion of said material from between said flutes.

13. A drill sharpener comprising:
a chuck adapted to securely retain a multi-flute drill bit;
a housing which encloses a grinding wheel assembly, the housing comprising
a sharpening port adapted to receive the chuck to present said drill bit
to the grinding wheel assembly to sharpen said flutes and a point-
splitting port adapted to receive the chuck to present said drill bit to the
grinding wheel assembly to remove material between said flutes; and
a debris collector to collect debris from the grinding wheel assembly, wherein
the collector is adapted to be removableably coupled to either one of said
ports while the chuck is inserted into the remaining one of said ports.

14. A drill sharpener as recited in claim 13, wherein said debris collector
comprises a hollow body and a cap secured at an end of the body opposite an end that
interfaces with said ports.

15. A drill sharpener as recited in claim 14, wherein said cap is vented to
permit gas to flow therethrough while substantially preventing solid particles of
selected size from exiting said cap.

16. A drill sharpener as recited in claim 14, wherein said cap is removable
from said body.

17. A drill sharpener as recited in claim 13, wherein the debris collector is
further adapted to be connected to a vacuum hose.

PCT/US03/30033 .01.102004

1 PEG/US

18. A drill sharpener as recited in claim 13, wherein the debris collector forms an elbow so that the collector can be canted downwardly when inserted into said ports.